APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/043,562	01/11/2002	Mathias Popp	10015699-1	7936

22879 7590 11/16/2005	EXAMINER	
HEWLETT PACKARD COMPANY	BATAILLE, PIERRE-MICHE	
P O BOX 272400, 3404 E. HARMONY ROAD		
INTELLECTUAL PROPERTY ADMINISTRATION	ART UNIT	PAPER NUMBER
FORT COLLINS, CO 80527-2400	2186	

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>08/29/05</u>.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-34* is/are pending in the application.

   4a) Of the above claim(s) *2,3,8,15,19 and 23* is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1,4-6,11,18,20-22 and 24-34* is/are rejected.

7) ☒ Claim(s) *7,9,10,12,13,16 and 17* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some *   c)☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
      application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   This Office Action is taken in response to applicant communication filed August 29, 2005 responding to the Non-Final Office Rejection dated April 27, 2005. Applicant's amendment and/or arguments have been considered with the results that follow.

2.   Claims 1, 4-7, 9-14, 16-18, 20-22, and 24-34 are now pending in the application under prosecution, as claims 2-3, 8, 15, 19, and 23 have been cancelled by the amendment.

Response to Arguments

3.   Applicant's arguments with respect to claims 1, 4-7, 9-14, 16-18, 20-22, and 24-34 have been considered but are deemed to be persuasive for at least he following remarks.

Please note that the Office Action has now correctly identify the statute of the rejection as being made under 35 USC § 102(e) in lieu of 35 USC § 102(b) as was the intention and the Examiner appreciates the Applicant's note in correcting the typographical error.

The Examiner acknowledges Applicant's notation of traditional administrator monitoring status of mirroring disk storages. Applicant further states that the applied publication by Yanai (US 2004/0073831) is nothing more that an example of Applicant's disclosed background art. However, Yanai's publication clearly discloses host remote

mirroring software in remote host monitoring mirroring interruption and automatic resynchronization of the mirroring process. Yes, paragraph 348 of Yanai states as follow:

> "The optional host remote mirroring (RM) software (213 in FIG. 4) enables an operator to monitor and control remote mirroring and data migration of the data storage system by entering commands at a host system console. In particular, the operator can query the status of the drive and link relationships between remotely mirrored data storage systems, query the synchronization status of each mirrored volume pair, modify the synchronization modes for each mirrored volume pair, and issue commands to suspend or resume the mirroring activity for each mirrored volume pair or an entire data storage system."

Clearly paragraph 0348 and 0185 illustrate the case when user intervention, where the host remote mirroring software permits an operator to initiate, inhibit, suspend, or resume remote mirroring in any specified direction between two data storage systems configured for remote mirroring. The same paragraph (0348) further states as follow: "The host remote mirroring software commands may be integrated into automated operations or host applications, giving the user a robust and elegant implementation of remote mirroring with a great deal of flexibility and control."

Simply, it is clear that user intervention is not required, as the remote mirroring status can be programmed for automatic resynchronization by the host application software. Paragraph 0030 of Yanai also clearly emphasizes that the host remote

mirroring software permits <u>a system operator or host application program</u> to monitor and control remote mirroring, migration, and recovery operations and the host remote mirroring software provides the capability of changing the configuration of the remotely mirrored volumes in the data processing system, suspending and resuming remote mirroring for specified remotely mirrored volume pairs. Paragraph 0024 further states: "Another aspect of the present invention provides mechanisms for selectively inhibiting automatic or manual recovery when automatic or manual recovery would be inappropriate."

Applicant appears not to be convinced with the Examiner's position on the required status. For emphasis, Yanai discloses each volume having configurable attribute specifying synchronization states specifying whether data is out-of-sync or sync required or pending. The system enters a synchronous mode or an asynchronous mode indicating whether there is a failure or not. Paragraph 0177 more clearly specify the synchronization process enabled or disabled, stating: "If the "sync required" attribute is not enabled, then all specified state changes to the secondary (R2) volume take effect when requested. If the "sync required" attribute is enabled, and if the secondary (R2) volume is not synchronized with the primary (R1) volume and not ready to the remote host at the time of the failure, then the non-synchronized secondary (R2) volume will remain not ready."

In view of the above remarks, the rejection with respect to claims 1, 4-6, 11, 18, 20-22, and 24-37 is maintained and updated below.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.   Claims 1, 4-6, 11, 18, 20-22, and 24-37 are rejected under 35 U.S.C. 102(e) as

being anticipated by US 2004/0073831 (Yanai et al).

With respect to claims 1, Yanai suggests a method for monitoring mirroring

conditions of at least one of a pair of storage units *[(remote data mirroring system*

having at least a primary storage and a secondary data storage system) Fig. 1,

Par. 0011, 0012] comprising: providing a machine-actionable memory having one or

more machine-actionable records arranged according to a data structure, the data

structure including at least one status field the contents of which are indicative of the

status of a mirroring process of the at least one storage unit pair, respectively *[(status*

information regarding logical volumes configured for remote mirroring) Par. 0311-

0324]; requesting status information relating to the at least one storage unit pair from

mirroring software associated therewith *[(service processor and host remote*

mirroring software responds to commands for requesting remote mirroring status) par. 0309]; receiving the requested status information *[(data storage system reports the following environmental error messages at the service processor user interface, and to the host and the customer service center) Par. 0287-0308]*; automatically updating the at least one status field of the machine-actionable memory based upon the requested status information; and automatically determining from the updated at least one status field of the machine-actionable memory whether the at least one storage unit pair is in a suspended condition *[(remote mirroring software for permitting a system operator or host application program to monitor and control remote mirroring, the remote mirroring software providing the capability of changing the configuration of the remotely mirrored volumes in the data processing system, suspending and resuming remote mirroring) Par. 0329-0347]*.

With respect to claims 18, 22, 31-32, Yanai discloses, similar to the features of claim 1, A system for monitoring mirroring conditions of at least one pair of storage units, comprising: a mirroring software system, adapted to automatically obtain status information on mirroring conditions of the at least one pair of storage units; and an apparatus, adapted to automatically monitor mirroring conditions of the at least one pair of storage units in conjunction with the mirroring software system *[(remote data mirroring system having at least a primary storage and a secondary data storage system) Fig. 1, Par. 0011, 0012]*, the apparatus including:

a database, adapted to store monitoring information for the storage unit pair and

arranged at least in part according to a data structure, the data structure including at

least one status field the contents of which are indicative of the status of a mirroring

process of at least one storage unit pair, respectively *[(status information regarding*

logical volumes configured for remote mirroring) Par. 0311-0324]; and

a control unit, operatively connected to the database and mirroring software for

the pair of storage units, adapted to:

request status information relating to the at least one storage unit pair from the

mirroring software system *[(service processor and host remote mirroring*

software responds to commands for requesting remote mirroring status)

par. 0309];

receive the requested status information *[(data storage system reports the*

following environmental error messages at the service processor user

interface, and to the host and the customer service center) Par. 0287-0308];

automatically update the at least one status field of the data structure based

upon the requested status information and to automatically determine the status

of a mirroring process between units of the at least one storage unit pair

[(remote mirroring software for permitting a system operator or host

application program to monitor and control remote mirroring, the remote

mirroring software providing the capability of changing the configuration of

the remotely mirrored volumes in the data processing system, suspending

and resuming remote mirroring) Par. 0329-0347]..

With respect to claims 4, 24, Yanai discloses resynchronizing, in conjunction with the mirroring software, the mirroring process between units of the storage unit pair, upon determining that the mirroring process between units of the storage unit pair has been suspended [Par. 0351, 0030].

With respect to claims 5, 25, Yanai discloses resynchronization occurs only upon determining that automatic resynchronization of the storage unit pair has been enabled [Par. 0330-0346; 0085].

With respect to claim 6, 20, 26 Yanai discloses the data structure further includes a field representing an auto recover flag, indicating whether or not automatic resynchronization has been enabled [Par. 0330-0346].

With respect to claim 21 and 27, Yanai discloses the data structure further including at least one field representing at least one of information identifying the storage unit pair, information identifying associated mirroring software, and information identifying a monitor interval, respectively [Par. 0283, 0310-0321].

With respect to claim 28, Yanai discloses wherein the database includes instances of the data structure for a plurality of storage unit pairs, respectively, and wherein status

information for each storage unit pair is requested, and mirroring conditions of each storage unit pair are monitored [Par. 0283, 0310-0321].

With respect to claims 29-30, Yanai discloses an interface, operatively connected to the database, for adding monitoring information for additional pairs of storage units and for varying stored monitoring information [Par. 0348].

With respect to claims 35-37, Yanai discloses automatically updating the at least one status field of the machine-actionable memory based upon the requested status information; and automatically determining from the updated at least one status field of the machine-actionable memory whether the at least one storage unit pair is in a suspended condition *[(remote mirroring software for permitting a system operator or host application program to monitor and control remote mirroring, the remote mirroring software providing the capability of changing the configuration of the remotely mirrored volumes in the data processing system, suspending and resuming remote mirroring) Par. 0329-0347]*.

Allowable Subject Matter

6.   Claims 7, 9-10, 12-13, 16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre-Michel Bataille whose telephone number is (571) 272-4178. The examiner can normally be reached on Mon-Fri (9:30A to 6:00P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew M. Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).
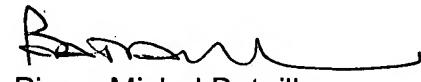
Pierre-Michel Bataille
Primary Examiner
Art Unit 2186

November 7, 2005

PIERRE BATAILLE
PRIMARY EXAMINER